



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,523	03/19/2001	Masao Minobe	Q65488	6184

23373 7590 02/24/2004

SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER
----------

NGUYEN, THONG Q

ART UNIT	PAPER NUMBER
----------	--------------

2872

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/810,523

Applicant(s)

MINOBE ET AL.

Examiner

Thong Q. Nguyen

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 18-31, 34-35 and 38-39 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 and 37 is/are allowed.
- 6) ☒ Claim(s) 1-17, 32 and 36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/21/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

1. The present Office action is made in response to the amendment filed on 11/21/2003.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-5 and 14-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) In each of claim 4 (line 9) and claim 14 (line 8), the feature thereof "said diffraction image plane" lacks a proper antecedent basis.

b) The remaining claims are dependent upon the rejected base claims and thus inherit the deficiencies thereof.

***Allowable Subject Matter***

4. The indicated allowability of claims 3-5, 14-17, 32 and 36 is withdrawn in view of the newly discovered reference(s) to the art cited by the applicant on 11/21/2003. Rejections based on the newly cited reference(s) follow.

5. Claims 33 and 37 are still allowed with respect to the cited art.

***Claim Rejections - 35 USC § 102***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Lipson, S. G. "Optical Physics" pages 332-334 and figures 12.3-12.4, submitted by applicant.

The optical apparatus as described in pages 333-334 and shown in figures 12-3 and 12.4 which is considered as a microscope for the function of enlarging image of a sample. The apparatus comprises an illuminating system having a light source (S) and a converging lens (L) for converging parallel light provided by the source (S) on a converged point in the space; a sample (O) disposed in front of the converged point of the illuminating light wherein it is implicit that the sample is mounted on some sample mounting table; and an objective lens (the lens between beam splitting mirror (M) and the plane F') disposed such that the illumination light is incident thereon after the light transmitted through or reflected by the sample is once converged at the converging point. It is noted that the objective lens is positioned in a manner in which its front focal point coincides with the converging point. The author as can be seen in page 333 also suggests the use of masks or obstacles for spatial filtering.

***Claim Rejections - 35 USC § 103***

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 3-5, 14-17, 32 and 36 as best as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipson, S. G. "Optical Physics" pages 332-

Art Unit: 2872

334 and figures 12.3-12.4 in view of Goodman "Introduction to Fourier Optics", pages 101-107 (submitted by applicant).

The optical apparatus as described in pages 333-334 and shown in figures 12-3 and 12.4 which is considered as a microscope for the function of enlarging image of a sample. The apparatus comprises an illuminating system having a light source (S) and a converging lens (L) for converging parallel light provided by the source (S) on a converged point in the space; a sample (O) disposed in front of the converged point of the illuminating light wherein it is implicit that the sample is mounted on some sample mounting table; and an objective lens (the lens between beam splitting mirror (M) and the plane F') disposed such that the illumination light is incident thereon after the light transmitted through or reflected by the sample is once converged at the converging point. It is noted that the objective lens is positioned in a manner in which its front focal point coincides with the converging point. The author as can be seen in pages 333-334 also suggests the use of masks or obstacles for spatial filtering. However, Lipson does not explicitly state that the distance between the diffractive image plane and the sample is adjustable. However it is known to one skilled in the art that an arrangement of an object or a disposal of an object between a lens and its converged point as can be seen in the textbook provided by Goodman in pages 102-107 and fig. 5.5. As stated by Goodman, a change in position of the plate labeled as "Input" with respect to the lens will vary the Fourier pattern and its characteristics. It is also noted that it is within the level of one skilled in the art to

Art Unit: 2872

utilize additional lens element(s) for the purpose of observing the Fourier image and/or the real image alternatively by focusing the additional lens element(s) on the appropriate plane, as the original real image created by the converging lens would not exist. The use of a mechanism for the disposal of the so-called "Input" with respect to the lens and alignment the filter inside the system is an obvious matter to one skilled in the art. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the system provided by Lipson by adjusting the distance between the diffractive plane and the sample as suggested by Goodman and utilizing additional lens as necessary for the purpose of alternatively observing the Fourier image and/or real image.

10. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberg (U.S. Patent No. 5,305,139) in view of Greenberg (U.S. Patent No. 5,684,626) (both of record).

Greenberg '139 discloses a microscope having an illuminating system. The device as described in columns 3-5 and 7-12 and shown in figs. 2 for example, comprises an illuminating system for providing light which is converged onto a point in space, a stage for supporting a sample located in front of the converged point, and an objective system for receiving light passing through the converged point. It is noted that while Greenberg in '139 does not clearly state that the light source system comprises a single light source and the light passing through the condenser lens is converged in a converging point different from the sample plane; however, in column 10 he indeed suggests the use of a single light source

Art Unit: 2872

and a reflecting means in the form of prism wherein the reflecting means is adjusted along the illuminating light path. The use of a single light source and a prism having reflecting facets which prism is movable along the illuminating light path is suggested by the same inventor as can be seen in the microscope provided by Green berg '626. In particular, in columns 8-9 and figures 12-13, Greenberg discloses the use of a single light source (76) and a reflecting means in the form of a cone (71) which is movable with respect to the light source (76) via a mechanism (72, 73). It is clear that the movement of the cone will affect the convergent status of light passing through the condenser lens with respect to the sample plane. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the microscope provided by Greenberg '139 by using an illumination system having a single light source and a reflecting means in the form of a cone which is movable along the illuminating light path as suggested by the same inventor in his Patent '626 for the purpose of varying the illuminating pattern.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberg (U.S. Patent No. 5,305,139) in view of Greenberg (U.S. Patent No. 5,684,626) as applied to claim 1 above, and further in view of Shimada et al (U.S. Patent No. 6,043,475, of record).

The combined product having an illuminating system as provided by Greenberg '139 and '626 does not disclose the movement of the objective lens for focusing with respect to the diffractive image plane and the sample. However, the

Art Unit: 2872

movement of an objective lens and the movement of a condenser lens with respect to an object to be illuminated and/or imaged as well as the diffracting image plane in a microscope is known to one skilled in the art as can be seen in the microscope provided by Shimada et al. See column 15 and fig. 14, for example. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the microscope provided by Greenberg by adjusting the position of the objective lens with respect to the sample for the purpose of adjusting the focus.

12. Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberg (U.S. Patent No. 5,305,139) in view of Greenberg (U.S. Patent No. 5,684,626) as applied to claim 1 above, and further in view of Ellis (of record).

The combined product having an illuminating system as provided by Greenberg '139 and '626 discloses the use of polarization elements in the illuminating light path as well as in the observed light path; however, Greenberg does not clearly teach the rotation of the polarization elements and the sample to be illuminated. However, the rotation of polarization elements and the sample in a microscope for changing the illumination pattern and/or the observation pattern is clearly suggested to one skilled in the art as can be seen in the system provided by Ellis. See columns 6-7. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the microscope provided by Greenberg by rotating the polarization elements and/or the sample as suggested by Ellis for the purpose of varying the illumination and/or observation patterns.



13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberg (U.S. Patent No. 5,305,139) in view of Greenberg (U.S. Patent No. 5,684,626) and Ellis as applied to claim 7 above, and further in view of Shimada et al.

The combined product as provided by Greenberg and Ellis does not disclose the movement of the objective lens for focusing with respect to the diffractive image plane and the sample. However, the movement of an objective lens and the movement of a condenser lens with respect to an object to be illuminated and/or imaged as well as the diffracting image plane in a microscope is known to one skilled in the art as can be seen in the microscope provided by Shimada et al. See column 15 and fig. 14, for example. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the microscope provided by Greenberg and Ellis by adjusting the position of the objective lens with respect to the sample for the purpose of adjusting the focus.

#### ***Response to Arguments***

14. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

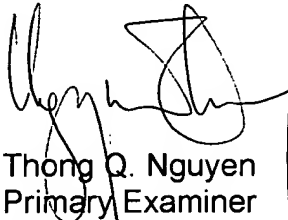
15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

Art Unit: 2872

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thong Q. Nguyen  
Primary Examiner  
Art Unit 2872

\*\*\*